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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 09/600,208
Filing Date: July 12, 2000
Appellant(s): ENGELHARDT ET AL.

MAILED

MAY 27 2005

GROUP 2800

C. Paul Maliszewski
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on March 11, 2005.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement discloses that there is not any related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Prior Art of Record

5,184,012	YAMAMOTO	2-1993
5-107037	HARA ET AL	4-1993
5,140,458	TAKAGI ET AL	8-1992
5,054,926	DABBS ET AL	10-1991

4,530,578	KATO	7-1985
5,672,880	KAIN	9-1997
5,404,238	DREESSEN ET AL	4-1995

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A) Claims 17, 25, 28, 32-33 and 39 rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto (U.S. Patent No. 5,184,012) in view of Hara et al (Japanese reference No. 5-107037).

Yamamoto discloses a scanning microscope having an illuminating system for illuminating a sample. The illuminating system as described at columns 4-6 and shown in figures 1-3 comprises a beam expanding system (30) disposed on an optical light path from a laser source (see the prior art as described at column 1 and shown in figure 5) and a scanning system (34 and 35) for scanning the illuminated light beam on the sample (A). The beam expanding system (30) as described at column 5 and shown in figure 3A will expand the illuminating diameter for matching with a particular objective lens used in the scanning microscope (see also column 6 and fig. 2 which discloses the interchangeability of different objective lenses). It is also noted that in the embodiment described at column 5 and shown in figure 3A, the beam expanding lens system is a zoom lens system in which the first lens element (41) acts as an additional lens having a fixed focal length for coupling the light from the laser source, and the second and third lens elements (43, 42), which in combination having a variable focal

length, are movable along the illuminated path. As a result, the collimation in the light beam exits from the beam expanding lens system will expand as a function of the focal length ratio between the fixed lens and the movable lenses. With regard to the feature concerning the adjustment in the beam diameter of the illuminating beam being automatically in response to a particular objective lens being used, such a feature is also disclosed by Yamamoto as can be seen in column 4, lines 35+ and column 5, lines 45+. With regard to the feature that the scanning microscope is a so-called "multiphoton" scanning microscope, such feature is considered as an intended use of the scanning microscope because the claim does not provide any limitation for the making the scanning microscope as the so-called "multiphoton" scanning microscope.

As such, the system provided by Yamamoto meets all of the limitations recited in the pending claims except the feature relating to the kind of the light source used in the system. In other words, while Yamamoto discloses the use of a laser source, he does not explicitly disclose that the laser is in the form of a point-like light source as claimed. However, the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is merely that of a preferred embodiment and not critical to the invention as admitted by the applicant in the present specification in page 6, section [0022]. It is also noted that the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is known to one skilled in the art as can be seen in the system provided by Hara et al. In particular, the

illuminating system provided by Hara et al comprises a semiconductor laser (2) which is a point light source and optics including a collimator lens (3) disposed in front of a beam expander (7). Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a laser in the form of a point-like light source with collimator lens as suggested by Hara et al for satisfying a particular design.

B) Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claim 17 above and further in view of Takagi et al (U.S. Patent No. 5,140,458).

The zoom beam expanding system as provided by Yamamoto and Hara et al meets all of the feature recited in the present claim 22 except he does not clearly state the movement of the movable lens element(s) is made by a motorized manner; however, the use of a motorized system for moving at least one lens for the purpose of changing the position of the at least movable lens with respect to other lens of a lens system used in an illuminating system of a microscope is clearly suggested to one skilled in the art as can be seen in the microscope having an illuminating system provided by Takagi et al. See column 3, lines 16+, for example. It is also noted that while applicant has used the term "video camera zoom" for the lens system in the present claim 23; however, since the claim has not provided any specific feature/limitation for the so-called "video camera zoom" and the operation of a zoom lens system, i.e., movement of at least one lens element with respect to other lens element(s) constituting the lens system, is

similar in all of optical device; therefore, the use of a motorized system for moving at least one lens with respect to other lens elements as provided by Takagi et al meets the requirement/limitation of claim 23. Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a motorized system as suggested by Takagi et al for moving at least one lens in a lens system disposed in the illuminating path of a microscope as that of Yamamoto for the purpose of adjusting the magnification thereof.

C) Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claim 17 above with or without Dabbs et al (U.S. Patent No. 5,054,926).

The illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source and a beam expanding apparatus disposed after the laser source as provided by Yamamoto and Hara et al meets all of the features recited in claim 29 except that he does not state that the illuminating system located downstream a laser source which can be in the form of an optical fiber. However, such use of light source as claimed is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present specification at pages 5-6 in which applicant has stated that the light source is a laser source. Further, the use of a point light source which is provided by a laser source or a laser diode or a combination of a light source with an optical fiber is clearly known to one skilled in the art as can be seen in the illuminating system provided by Dabbs et al. See

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column 4, lines 40+. Thus, absent any showing of criticality, it would have been obvious to one skilled in the art at the time the invention was made to utilize any suitable light source or a combination of available light sources and fiber for the purpose of providing a light beam which is in the form of a point light source or a collimating light beam.

D) Claims 34-36, as best as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al as applied to claim 17 above and further in view of Kato (U.S. Patent No. 4,530,578).

The illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source and a beam expanding apparatus disposed after the laser source as provided by Yamamoto and Hara et al meets all of the features recited in claims 34-36 except the feature concerning the use of an additional element in the form of a lens for the purpose of varying the light intensity. However, the use of lens systems each comprises at least one lens element and stop between a light source having fiber and a beam-expanding system for the purpose of varying the light intensity is known to one skilled in the art as can be seen in the illuminating system for use with a microscope provided by Kato. See columns 2-3 and figs. 3. It is also noted that an adjustment in the diameter of a stop for controlling the beam diameter passing through the stop is also within the level of one skilled in the art. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the illuminating system provided by Yamamoto and Hara et al by using an additional optics

between the light source and the beam-expanding system as suggested by Kato for the purpose of varying the light intensity for the purpose of adjusting the light intensity near the edge of the illuminating beam.

E) Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al and Kato as applied to claim 34 above with or without Kain (5,672,880).

The combined illuminating system for use with a scanning microscope wherein the illuminating system comprises a laser source, a beam expanding apparatus disposed after the laser source and an additional system between for varying the light intensity near the edge of a light beam as provided by Yamamoto, Hara et al and Kato meets all of the feature recited in claim 37 except the feature concerning the use of an additional element in the form of a holographic element for the purpose of varying the light intensity. However, the use of lens system between a light source and a beam-expanding system wherein the lens element is a holographic lens element for the purpose of varying the light intensity as claimed is merely that of a preferred embodiment and no criticality has been disclosed. The support for that conclusion is found in the present specification at page 4 in which applicant has stated that the additional element is a conventional lens element or an annular stop. Further, the use of a holographic lens element between a light source and a beam-expanding system is clearly known to one skilled in the art as can be seen in the illuminating system provided by Kain. See columns 4-5. Thus, absent any showing of criticality, it would have been obvious

to one skilled in the art at the time the invention was made to utilize any suitable optical elements including a holographic lens element as suggested by Kain between the light source and the beam-expanding system for the purpose of adjusting the light intensity at the edge of the light beam.

F) Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamamoto in view of Hara et al and Dreessen et al (U.S. Patent No. 5,404,238).

Yamamoto discloses a scanning microscope having an illuminating system for illuminating a sample. The illuminating system as described at columns 4-6 and shown in figures 1-3 comprises a beam expanding system (30) disposed on an optical light path from a laser source (see the prior art as described at column 1 and shown in figure 5) and a scanning system (34 and 35) for scanning the illuminated light beam on the sample (A). The beam expanding system (30) as described at column 5 and shown in figure 3A will expand the illuminating diameter for matching with a particular objective lens used in the scanning microscope (see also column 6 and fig. 2 which discloses the interchangeability of different objective lenses). It is also noted that in the embodiment described at column 5 and shown in figure 3A, the beam expanding lens system is a zoom lens system in which the first lens element (41) acts as an additional lens having a fixed focal length for coupling the light from the laser source, and the second and third lens elements (43, 42), which in combination having a variable focal length, are movable along the illuminated path. As a result, the collimation in the light beam exits from the beam expanding lens system will expand as a function

of the focal length ratio between the fixed lens and the movable lenses. With regard to the feature concerning the adjustment in the beam diameter of the illuminating beam being automatically in response to a particular objective lens being used, such a feature is also disclosed by Yamamoto as can be seen in column 4, lines 35+ and column 5, lines 45+. With regard to the feature that the scanning microscope is a so-called "multiphoton" scanning microscope, such feature is considered as an intended use of the scanning microscope because the claim does not provide any limitation for the making the scanning microscope as the so-called "multiphoton" scanning microscope.

As such, the system provided by Yamamoto meets all of the limitations recited in the pending claims except the feature relating to the kind of the light source used in the system. In other words, while Yamamoto discloses the use of a laser source, he does not explicitly disclose that the laser is in the form of a point-like light source as claimed. However, the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is merely that of a preferred embodiment and not critical to the invention as admitted by the applicant in the present specification in page 6, section [0022]. It is also noted that the use of an illumination system having a laser and optics wherein the laser is in the form of a point-like light source is known to one skilled in the art as can be seen in the system provided by Hara et al. In particular, the illuminating system provided by Hara et al comprises a semiconductor laser (2) which is a point light source and optics including a collimator lens (3) disposed in

front of a beam expander (7). Thus, it would have been obvious to one skilled in the art at the time the invention was made to utilize a laser in the form of a point-like light source with collimator lens as suggested by Hara et al for satisfying a particular design.

In regard to the feature missing from the art of Yamamoto and Hara et al in that the combined product does not state that another light source is used via a coupling-in manner. However, the use of an illuminating system having more than one light source in a microscope is clearly known to one skilled in the art as can be seen in the microscope having an illuminating system provided by Dreessen et al. In particular, in column 2 and fig. 1, they disclose an illuminating system having only one light source; however, in column 3 and fig.2, they disclose the use of a coupling-in unit for coupling two light beams from two light sources. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the illuminating system provided by Yamamoto and Hara et al by using a illuminating system having two light sources and a coupling-in unit as suggested by Dreessen et al for the purpose of increasing the intensity of light or alternatively for altering the type of different light sources to be used to meet different requirements of illumination.

(10) Response to Argument

Appellant's arguments provided in the Brief, pages 5-16 have been fully considered but they are not persuasive.

A) With regard to the rejections of claims 17, 25, 28, 32-33 and 39, appellant has argued that there is not any suggestion/motivation to combine art of Yamamoto and Hara. See Brief, pages 5-11. The Examiner respectfully disagrees with the applicant for the following reasons.

Aa) In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

Yamamoto discloses a scanning microscope having an illuminating system for illuminating a sample. The illuminating system as described at columns 4-6 and shown in figures 1-3 comprises a beam expanding system (30) disposed on an optical light path from a laser source (see the prior art as described at column 1 and shown in figure 5) and a scanning system (34 and 35) for scanning the illuminated light beam on the sample (A). The beam expanding system (30) as described at column 5 and shown in figure 3A will expand the illuminating diameter for matching with a particular objective lens used in the scanning microscope (see also columns 6 and 7 and fig. 2 which discloses the interchangeability of different objective lenses). With regard to the feature concerning the adjustment in the beam diameter of the illuminating beam being

automatically in response to a particular objective lens being used, such a feature is also disclosed by Yamamoto as can be seen in column 4, lines 35+ and column 5, lines 45+. As a result of such a structure, the illuminating system provided by Yamamoto meets all of the features of the device as claimed except that Yamamoto does not clearly state the laser is a point like source as claimed. However, as stated by the applicant in the present specification, a point-like light source is not critical to the invention because the specification has disclosed different types of light source being used in the system. The support for that conclusion is found in the present specification in which it discloses that the light source can be a point light source or a laser source or a parallel light beam of an alternative/conventional light source. See present specification in page 3, section [0014] and page 6, section [0022]. Applicant should note that it was decided in the Courts, *In re Hinman*, 141 USPQ 785, that it was a matter of design choice to use a material in the claim rather than other material used in the prior art where applicant's specification casually made references several times in the specification of the materials' interchangeability. See also *In re Leshin*, 125 USPQ 416.

It is also noted that while the Yamamoto does not clearly state that the laser used in his device is a point-like source; however, he also disclose no particular reason for not using a laser in the form of a point-like source or a combination of a point-like source and a collimating lens.

In the same field of endeavor, the use of an illuminating system for illuminating an object wherein the illuminating system comprises a laser source in the form of a point-like source and a collimating lens is disclosed by Hara et al. Thus, it would have been obvious to one skilled in the art to utilize the laser and the collimating lens combination for providing light as provided by Hara et al for the laser used in the system of Yamamoto for the purpose of controlling the point of origin and therefore able to efficiently concentrate light by the collimating lens as recognized in the knowledge generally available to one of ordinary skill in the art.

Ab) In response to appellant's arguments that the references cited by the Examiner teach away from the invention because the illuminating system of Hara provide an overillumination of the pupil. The Examiner respectfully disagrees with the appellant's opinions. The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981). In this case, the art of Hara is used to show that a laser in the form of a point-like source is used in the illuminating system. Such a fact, i.e., a point-like source used in the illumination, is true because applicant has not provided any arguments to deny it. Applicant's arguments relating to the formation of illuminating pattern provided by the expanding system of Hara is not persuasive because the expanding system of

the device claimed is clearly disclosed by Yamamoto. The art of Hara is used as a secondary reference to shown to one skilled in the art that a point-like light source used in the illumination is known.

Ac) In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

Ad) In response to the appellant's arguments that the Examiner has not provided/cited any statute, regulation, MPEP section, or case law that includes the criticality requirement for an obviousness rejection. Appellant is respectfully invited to review *In re Hinman*, 141 USPQ 785 and *In re Leshin*, 125 USPQ 416, which are used for an obviousness rejection.

B) Regard to the rejections of other claims, i.e., claims 22-23, 29 and 34-37, since appellant has not provided any specific arguments; therefore, the mentioned claims are still rejected for the same reasons as set forth in the final Office action and being repeated in this Office action.

C) Regard to the rejection of claim 38, since appellant has not provided any specific arguments except the argument that Dreessen et al does not teach a point-like source; therefore, the claim is still rejected for the same reasons as set forth in sections Aa)-Ad) of this Office action.

Regarding to the appellant's arguments related to the art of Dreessen et al, the Examiner respectfully disagrees with the appellant's opinions and respectfully invited the appellant to review the rejection of the claim 38. In particular, the art of Dreessen et al is used to show to one skilled in the art the use of another light source and a coupling mechanism for coupling light from the light source into the system which feature is missing from the art of Yamamoto and Hara et al. In particular, in column 2 and fig. 1, Dreessen et al disclose an illuminating system having only one light source; however, in column 3 and fig.2, they disclose the use of a coupling-in unit for coupling two light beams from two light sources. Thus, it would have been obvious to one skilled in the art at the time the invention was made to modify the illuminating system provided by Yamamoto and Hara et al by using a illuminating system having two light sources and a coupling-in unit as suggested by Dreessen et al for the purpose of increasing the intensity of light or alternatively for altering the type of different light sources to be used to meet different requirements of illumination.

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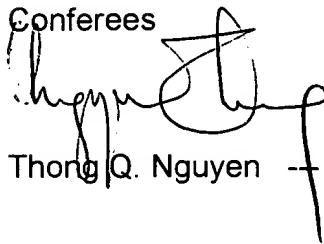
For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Thong Q Nguyen
Primary Examiner
Art Unit 2872

May 25, 2005

Conferees



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